Comment on "Correlation between the activity of the autonomic nervous system and endothelial function in patients with acute coronary syndrome"

To the Editor We read with great interest a recent paper by Cieślik-Guerra et al.,[1] confirming the correlation between the activity of the autonomic nervous system and endothelial function in patients after acute coronary syndrome. The authors[1] evaluated endothelial function using peripheral arterial tonometry (EndoPAT 2000 system, Itamar Medical, Caesarea, Israel). This relatively simple noninvasive technique indeed correlates with microvascular coronary endothelial function. However, the measured reaction (reactive hyperemia index) is only partly endothelial-dependent, and other factors affecting microcirculation, such as the sympathetic nervous system, may affect the results. Thus, other methods of the assessment of endothelial function such as brachial artery flow-mediated vasodilation[2] or invasive measurement of coronary vasomotion after the administration of intracoronary vasoactive stimuli, mainly acetylcholine,[3] would seem to be more appropriate for assessing such a correlation. Importantly, the correlation between the activity of the autonomic nervous system (measured with the sympathetic skin response test) and endothelial function was confirmed only in the upper limbs. These findings are in line with the previous studies in healthy subjects.[4] In such individuals, the latency values of sympathetic skin response measured from the hands are significantly shorter than those from the legs, and the amplitude values are significantly higher from the hands in comparison with those from the legs.[4] It could also be observed in the group of patients after acute coronary syndrome and may explain the lack of correlation within the lower limbs.

Endothelial dysfunction is considered an important early marker of atherosclerotic plaque formation and also an important predictor of serious cardiovascular events in patients with confirmed coronary artery disease.[3] Endothelial dysfunction is even more pronounced in patients with acute coronary syndromes, which might be caused by significantly elevated inflammatory activity in this group of patients.[3] However, an improvement of endothelial function occurs in most cases within a few months after acute coronary syndrome. Thus, the assessment of patients soon after the onset of acute coronary syndrome might provide a more definite answer as to the importance of the correlation between the activity of the autonomic nervous system and endothelial function in this group of patients.

As discussed by Cieślik-Guerra et al.,[1] endothelial function is affected by the use of pharmacological agents. We have confirmed that even short-term anti-inflammatory therapy with high-dose atorvastatin and selective cyclooxygenase-2 inhibitor improves coronary endothelial function within 7 days in patients presenting with non-ST-segment elevation acute coronary syndrome. We agree with the authors that all patients received the same pharmacological treatment that affected the neurohumoral system and endothelium, and the assessment of pharmacotherapy was not crucial for this analysis.

We congratulate Cieślik-Guerra et al.[1] for identifying such an important correlation between the activity of the autonomic nervous system and endothelial function in patients after acute coronary syndrome. Importantly, this study may have clinical implications but comparative analyses between invasive and noninvasive methods of the assessment of endothelial function and the activity of the autonomic nervous system are needed before implementation in clinical practice. Further research should take into account the complex and multifactorial nature of endothelial dysfunction. We are looking forward to the next reports from such a significant project as the FOREVER study (Focus On stiffness Reduction, Endothelial function and autonomic nervous system improVement In patient after MI with or without hypErtension after cardiovascular Rehabilitation).[1,5]

Author names and affiliations Artur Dziewierz, Michał Chyrchel, Dariusz Dudek (AD, MC: 2nd Department of Cardiology, Jagiellonian University Medical College, Kraków, Poland; DD: Department of Interventional Cardiology, Jagiellonian University Medical College, Kraków, Poland)

Corresponding author Artur Dziewierz, MD, PhD, II Klinika Kardiologii, Instytut Kardiologii, Uniwersytet Jagielloński, Collegium Medicum, ul. Kopernika 17, 31-501 Kraków, Poland, phone: +48-12-424-71-81, fax: +48-12-424-71-84, e-mail: adziewierz@gmail.com

Conflict of interest The authors declare no conflict of interest.

REFERENCES

1 Cieślik-Guerra UI, Fila M, Kamiński M, et al. Correlation between the activity of the autonomic nervous system and endothelial function in patients with acute coronary syndrome. Pol Arch Med Wewn. 2014; 124: 509-515.

2 Wilk G, Osmenda G, Matusik P, et al. Endothelial function assessment in atherosclerosis: comparison of brachial artery flow-mediated vasodilation and peripheral arterial tonometry. Pol Arch Med Wewn. 2013; 123: 443-452.

3 Chyrchel M, Dudek D, Rzeszutko L, et al. Effects of short-term anti-inflammatory therapy on endothelial function in patients with non-ST-segment elevation acute coronary syndrome. Cardiovasc Revasc Med. 2011; 12: 2-9.

4 Kucera P, Goldenberg Z, Kurca E. Sympathetic skin response: review of the method and its clinical use. Bratisl Lek Listy. 2004; 105: 108-116.

5 Cieślik-Guerra UI, Kamiński M, Kurpesa M. Correlations of pulse wave velocity with augmentation index and ambulatory arterial stiffness index in the population of patients after acute coronary syndrome. Preliminary results of the FOREVER study. Pol Arch Med Wewn. 2013; 123: 327-329.